## REMARKS

Claims 1-10 and 16-17 are pending in the application. Claims 11-15 were previously canceled. Reconsideration and review of the claims on the merits are respectfully requested in view of the following remarks.

The Examiner maintains that Claims 1-10 are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over WO 99/47573 (WO '573) either individually, or in view of admitted prior art, and further in view of Nakae et al. (US 4,353,817) for the reasons given in the Office Action. The Examiner states that in the absence of unexpected results, it would have assertedly been obvious to one of ordinary skill in the art of polyolefin foams to modify WO '573 by incorporating a suitable amount of metal hydroxides in the polyolefin foams, as taught by Nakae, motivated by the desire to improve the flame retardancy of the polyolefin foams.

Applicants respectfully traverse the rejection.

Applicants maintain that the presently claimed invention is not rendered *prima facie* obvious by the combination of Nakae and WO '573.

Nakae discloses that aluminum hydroxide or magnesium hydroxide is most preferably used in Nakae's composition (see col. 7, lines 49-52). Only aluminum hydroxide is used in the Examples of Nakae. Further, Nakae does not contain any disclosure regarding a method of impregnating a resin with an inert gas to expand the same, and also does not contain any disclosure to teach or suggest that a composite metal hydroxide is optimum in an expanding method. Nakae evaluates aluminum hydroxide as a flame retardant, but Nakae does not evaluate or give any technical comments about a composite metal hydroxide as presently claimed.

Furthermore, Nakae does not provide any motivation to one skilled in the art to use a composite metal hydroxide as a flame retardant.

WO '573 is silent regarding a flame retardant. Therefore, even if WO '573 is combined with Nakae, such a combined teaching does not provide any motivation to select a composite metal hydroxide as a flame retardant.

Furthermore, in addition to the reasons for patentability given above, Applicants conducted additional experimentation in order to clarify that the claimed composite metal hydroxide represented by formula (1) exhibits unexpectedly superior results over the closest prior art metal hydroxide compound, as provided in the Rule 132 Declaration, submitted concurrently herewith.

As is apparent from the experimental results given in the Rule 132 Declaration, the present invention uses the composite metal hydroxide represented by formula (1) as a flame retardant, thereby obtaining microporous soundproofing materials having unexpectedly superior expansion properties and flame retardancy (see the Table in the Rule 132 Declaration). Furthermore, the use of $Al_2O_3 \cdot nH_2O$ in Comparison Examples 1-3 resulted in low degrees of expansion and unacceptable flame retardancy (see the Table in the Rule 132 Declaration).

Therefore, Applicants submit that the unique effect (unexpectedly high degree of expansion) of the presently claimed invention as evidenced in the results of the comparative experiment in the Rule 132 Declaration would not be obvious to one skilled in the art from the teachings of Nakae and WO '573.

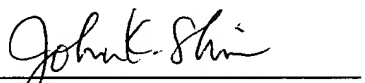
Thus, the claimed invention is not rendered *prima facie* obvious by the combination of Nakae and WO '573, and the unexpectedly superior results obtained in the presently claimed invention support patentability of the claimed invention over the cited references.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a).

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: October 13, 2004

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Mitsuhiro Kanada, et al.

Docket No: Q62454

Appln. No.: 09/750,125

Group Art Unit: 1771

Confirmation No.: 6746

Examiner: Victor S. Chang

Filed: December 29, 2000

For: MICROPOROUS SOUNDPROOFING MATERIAL

## DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Takayuki Yamamoto, hereby declare and state:

THAT I am a citizen of JAPAN;

THAT I have graduated with a Master's degree in Engineering from Shizuoka University, Department of Industrial Chemistry in March 1984;

THAT I have been employed by Nitto Denko Corporation since April 1984, where I hold a position as Chief Researcher in Production Engineering Development Center of the Company;

THAT I am a co-inventor of the invention described and claimed in the above-identified application;

THAT I am familiar with the prosecution of the above-identified application; and

THAT the experimentation set forth below was conducted by me or under my direct supervision.

DECLARATION UNDER 37 C.F.R. § 1.132
U.S. Application No. 09/750,125

Q62454

I hereby submit experimental data showing unexpectedly superior results from the claimed composite metal hydroxide. The claimed composite metal hydroxide exhibits unexpectedly superior effects as shown from the following experiments which were conducted using metal hydroxides other than the claimed specific metal hydroxide.

Experiment 1 (Comparison)

50 parts by weight of polypropylene having a density of 0.9 g/cm$^3$ and a 230°C melt flow rate of 4, 50 parts by weight of an ethylene/propylene elastomer having a JIS-A hardness of 69, and 100 parts by weight of $Al_2O_3 \cdot nH_2O$ (average particle diameter: 0.6 μm) were kneaded by means of a kneading machine equipped with roller type blades (trade name "Labo Plastomill", manufactured by Toyo Seiko Seisaku-Sho, Ltd.) at a temperature of 180°C. Subsequently, the resulting mixture was formed into a sheet having a thickness of 0.5 mm and a diameter of 80 mm with a hot platen press heated at 180°C.

This sheet was placed in a pressure vessel and held in a 150°C carbon dioxide gas atmosphere for 10 minutes at an elevated pressure of 15 MPa to thereby impregnate the sheet with carbon dioxide. After 10 minutes, the pressure was abruptly lowered to obtain an expanded material consisting of the olefin polymers. This expanded material had a degree of expansion of 1.4 times.

Experiment 2 (Comparison)

An expanded material was obtained in the same manner as in Experiment 1 above, except that $Al_2O_3 \cdot nH_2O$ (average particle diameter: 8.0 μm) was used in place of $Al_2O_3 \cdot nH_2O$ (average particle diameter: 0.6 μm).

This expanded material had a degree of expansion of 2.2 times.

Experiment 3 (Comparison)

An expanded material was obtained in the same manner as in Experiment 1 above, except that $Al_2O_3 \cdot nH_2O$ (average particle diameter: 25 μm) was used in place of $Al_2O_3 \cdot nH_2O$ (average particle diameter: 0.6 μm).

This expanded material had a degree of expansion of 6 times.

Experiment 4 (Invention)

An expanded material was obtained in the same manner as in Experiment 1 above, except that $MgO \cdot NiO \cdot H_2O$ (average particle diameter: 0.7 μm) was used in place of $Al_2O_3 \cdot nH_2O$ (average particle diameter: 0.6 μm).

This expanded material had a degree of expansion of 33 times.

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EVALUATION

Flame retardancy of the expanded materials obtained in Experiments 1 to 4 above was evaluated in the same method as described on page 32 of the specification of the present invention.

The degree of expansion was determined by the following equation.

Degree of expansion=(density of sheet before expansion)/(density of expanded material)=1/(relative density)

The results obtained in Experiments 1 to 4 above are shown in the Table below together with the results obtained in Examples 7, 8 and 9 of the present application.

| | Metal hydroxide (Average particle diameter) | Flame retardancy | Degree of expansion (Times) |
|---|---|---|---|
| Experiment 1 | $Al_2O_3$ (0.6 μm) | Unacceptable | 1.4 |
| Experiment 2 | $Al_2O_3$ (3.0 μm) | Unacceptable | 2.2 |
| Experiment 3 | $Al_2O_3$ (25.0 μm) | Unacceptable | 6.0 |
| Experiment 4 | $MgO·ZnO·H_2O$ (0.7 μm) | Acceptable | 33 |
| Example 7 | $MgO·ZnO·H_2O$ (1.0 μm) | Acceptable | 25 |
| Example 8 | $MgO·ZnO·H_2O$ (1.0 μm)+α | Acceptable | 13 |
| Example 9 | $MgO·ZnO·H_2O$ (0.5 μm) | Acceptable | 19 |

Experiments 1-3: Comparison

Experiment 4: Invention

α: Ethylenebispentabromophenyl

As is apparent from the results shown in the above Table, use of the specific metal hydroxide in a microporous soundproofing material can satisfy flame retardancy of the material and can also remarkably increase a degree of expansion of an expanded material.

DECLARATION UNDER 37 C.F.R. § 1.132
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The unexpectedly superior results are attributed to the following. In a production method of an expanded material using an insert gas as an expanding agent as in the present invention, the insert gas vaporizes together with rapid pressure drop, resulting in growth of pores. In such a case, if affinity between a resin and a flame redardant is poor, the resin peels at the boundary, resulting in formation of vent holes of the inert gas. As a result pores do not grow.

Contrary to this, the metal hydroxide has good affinity with a resin. Therefore, a resin fluidizes well, and pores grow. As a result, it is considered that a high degree of expansion is obtained.

Expanded materials having a very high degree of expansion have small compression stress and conform well to a rough surface, so that high soundproofing property is achieved, as described in the present specification. Therefore, such materials are suitable as a soundproofing material.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: Oct. 08 / 2009

Takayuki Yamamoto

Takayuki Yamamoto (Co-Inventor)